

State of Rhode Island and Providence Plantations.

SIXTH ANNUAL REPORT

OF THE

CORPORATION

OF THE

Rhode Island College of Agriculture and Mechanic Arts,

MADE TO THE

GENERAL ASSEMBLY AT ITS JANUARY SESSION, 1894.

PART I.

COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

(PART II.-- Agricultural Experiment Station --is printed under separate cover.)

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E. L. FREEMAN & SON, PRINTERS TO THE STATE.

1894.

CORPORATION

OF THE

RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

MELVILLE BULL,	-	-	-	-	-	-	-	Newport County.
C. H. COGGESHALL,	-	-	-	-	-	-	-	Bristol County.
CHAS. O. FLAGG,	-	-	-	-	-	-	-	Providence County.
CHAS. J. GREENE,	-	-	-	-	-	-	-	Washington County.
NATHAN D. PIERCE, JR.,	-	-	-	-	-	-	-	Kent County.

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H. J. WHEELER, PH. D.,	-	-	-	-	-	Chemist.
L. F. KINNEY, B. SC.,	-	-	-	-	-	Horticulturist.
SAMUEL CUSHMAN,	-	-	-	-	-	Apiarist and Poultry Manager.
J. D. TOWAR, B. SC.,	-	-	-	-	-	Assistant Agriculturist.
B. L. HARTWELL, B. SC.,	-	-	-	-	-	Assistant Chemist. ✓
H. F. ADAMS,	-	-	-	-	-	Farmer.
MISS A. R. FRENCH,	-	-	-	-	-	Clerk.

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President, Professor of Chemistry.

CHAS. O. FLAGG, B. SC.,
Professor of Agriculture.

L. F. KINNEY, B. SC.,
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Professor of Mathematics.

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WM. E. DRAKE, B. SC.,
Professor of Mechanical Engineering and Physics.

O. C. WIGGIN, M. D.,
Professor of Biology and Comparative Anatomy.

J. D. TOWAR, B. SC.,
Assistant Professor of Agriculture.

THOS. C. RODMAN,
Instructor in Wood Work.

F. A. LANE,
Instructor in Mechanical Drawing and Surveying.

M. P. HELME,
Instructor in Drawing.

SAMUEL CUSHMAN,
Lecturer on Bee Keeping.

RUTH M. WILLIAMS,
Instructor in English and History.

COLLEGE CALENDAR.

1894.

January 3d,	- - - - -	Term begins.
“ 25th,	- - - - -	Day of Prayer for Colleges.
February 22d,	- - - - -	Washington's Birthday.
March 28th,	- - - - -	Term ends.

SPRING TERM.

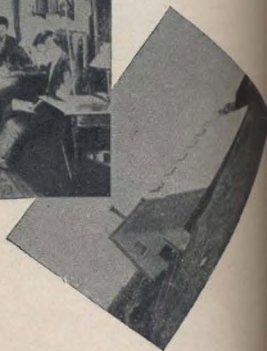
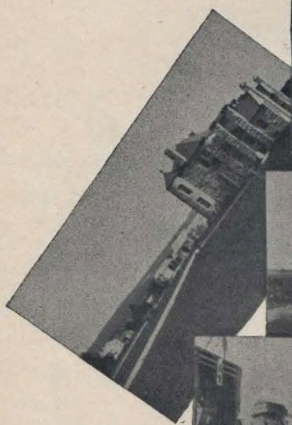
April 5th,	- - - - -	Term begins.
_____ ,	- - - - -	Arbor Day.
May 30th,	- - - - -	Decoration Day.
June 5th,	- - - - -	Senior Examinations begin.
“ 8th, 10 A. M.,	- - - - -	Entrance Examinations.
“ 10th,	- - - - -	Baccalaureate Sermon.
“ 11th, 7.45 P. M.,	- - - - -	Faculty Reception.
“ 12th, 10 A. M.,	- - - - -	Commencement Exercises.

FALL TERM.

September 17th, 10 A. M.,	- - - - -	Entrance Examinations.
“ 18th,	- - - - -	Term begins.
December 21st,	- - - - -	Term ends.

1895.

January 2d,	- - - - -	Winter Term begins.
“ 2d,	- - - - -	Winter Course in Agriculture and Mechanics begins.
March 29th,	- - - - -	Term and Winter Course ends.
April 9th,	- - - - -	Spring Term begins.
June 14th,	- - - - -	Commencement.



Chemical Laboratory.

Class in Agriculture Scoring Cattle.

Class in Chemical Laboratory.

General View of College Buildings.

View of Student's Room.

Foot Ball Team.

Plant House.



REPORT.

To His Excellency, D. Russell Brown, Governor, and the Honorable, the General Assembly of the State of Rhode Island, at its January Session, 1894 :

KINGSTON, January 31st.

In our last annual report a brief review of the legislation touching the establishment of the Rhode Island College of Agriculture and Mechanic Arts was given. The act of incorporation was printed in full, beginning upon page twelve (12), and in subsequent pages was given an account of the demand made by the Corporation of Brown University upon the General Treasurer for the funds appropriated by said act to the maintenance of this college, and the legal proceedings instituted by them to prevent the General Treasurer from paying said funds to the Treasurer of this Board of Managers.

At the time of making our last report the case was pending before the United States Circuit Court. Attorney General Robt. W. Burbank as the legal representative of the State was made a party defendant in the case. James Tillinghast, Esq., of Providence, was employed by the Board of Managers of this College, and Arnold Green, Esq., had in charge the interests of Brown University. The case came up for hearing on May the 29th, 1893, before His Honor, Judge Carpenter, who on the 31st of May handed down the decision which we quote below in full :

CARPENTER, J. This bill is brought by the trustees and fellows of Brown University against the Rhode Island College of Agriculture and Mechanic Arts, Melville Bull, treasurer of said corporation, and Samuel Clark, General

Treasurer, and Robt. W. Burbank, Attorney General of the State of Rhode Island, etc.

It sets out the act of Congress donating lands to the States which may provide agricultural colleges, 12 Stat. 503; the resolutions of the General Assembly of Rhode Island, Acts and Resolves, January session, 1863, pages 214 and 216, accepting the grant and assigning the same to Brown University, and providing for the establishment therein of a college or department for the teaching of agriculture and the mechanic arts; the act of Congress for the more complete endowment and support of the agricultural colleges, 26 Stat. 417; the resolution of the General Assembly, passed May 19, 1892, accepting the provisions of the last-named act of Congress, and finally the act of the General Assembly, Public Laws, chapter 1078, establishing and incorporating the respondent corporation "as a college" * * as provided in the act of Congress of the United States first above named.

It sets out that there is due from the Government under the above acts the sum of \$48,000, which sum when received by the General Treasurer will be demanded by and paid over to the respondent corporation; and prays that said corporation and the General Treasurer may be enjoined from so demanding or paying over such sum of money, and any other sum of money hereafter to be received on the same account; and that the same may be decreed to be paid over to the complainants.

The bill was originally brought in the Supreme Court of Rhode Island and removed by petition to this Court.

It is objected that this Court has no jurisdiction to determine the demurrer, because it involves the construction and effect of the resolutions and laws of the State. But I am clear that this case is one arising under the laws of the United States, although also involving rights under the State laws, and so is cognizable by this Court. *Mitchell vs. Smale*, 140 U. S. 406.

The respondents further contend that the action is in substance against the State, and so cannot be maintained. I think an answer to the question thus raised may be extracted from the reasoning in *Pennoy vs. McConnaughy*, 140 U. S. 1, wherein all the cases are fully considered and distinguished. It seems to me to be there held that a respondent, being a State officer, may be enjoined from performing an act purely official in pursuance of a State law which is found to be unconstitutional and void; but that the Court has no power to control the "affirmative official action" of the officers of the State in the performance of an obligation which belongs to the State in its political capacity. The distinction is close, but it has been established and must be interpreted, applied and maintained. In applying the rule thus laid down to the case in

hand, I find that the act of Congress of 1890, 26 Stat. 417, contains the provision on the construction of which, as it appears to me, the answer to the question here raised must depend, that the sums thereby appropriated "shall be annually paid * * * to the State or Territorial Treasurer, or to such officer as shall be designated by the laws of such State or Territory to receive the same, who shall, upon the order of the trustees of the college or the institution for colored students, immediately pay over said sums to the Treasurers of the respective colleges or other institutions entitled to receive the same. * * *"

The complainant contends that the duty here assigned is a personal duty only, and that the fact that it is to be performed by a State officer imports only that the person upon whom the duty is devolved by the act of Congress is to be ascertained by reference to the fact that he is the Treasurer or the officer specially designated by the State; that no duty is devolved on the State; and that, if this be so, any act of the State which may interfere with the action of the State officer in this regard is void and should be held to be of no effect in the decision here.

The respondents contend that the provision for payment has the effect only to point out the particular person who shall, on behalf of the State, receive and give receipt for the draft on the Treasury; that the grant made in the act is made to the State in trust for the specific purposes; that the administration of the trust belongs to the State, and that a decree controlling this administration is a decree against the State and against the property of the State, and so is prohibited by the rule that a State may not be sued without its own consent.

Regarding the two courses of reasoning which I have thus summarized, I find it necessary, as I view the case, to make only one observation. This is an action to control the administration of a fund which is alleged to belong to the State only as trustee for a particular purpose. But even so, if the respondents are right in their construction of the law, it is the trust property of the State and not of the individual officer; and the suit here, being a suit to control and enforce the performance of a duty laid on the State by law, is no less a suit against the State than if it were, for example, a suit to compel the State to perform a duty arising from its own contract.

In this connection it may be useful to make an observation as to the case of *Pennoyer v. McConnaughy*. That case, as well as most, if not all, those on whose authority it is based, was an action brought in the Court of the United States, and was prohibited by the 11th article of amendment to the Constitution, being a suit against a State by a citizen of another State, and not, as here, a suit alleged to be against the State by one of its own citizens. But that case was determined by ascertaining what is a suit against a State. Here

the principle is invoked that in no court may a suit be brought against a State without its consent. The decision as to what constitutes a suit against a State is therefore in point as an authority.

I shall assume, as contended by the respondents, that this action may not be maintained if it be in substance against the State. This proposition does not seem to me in any degree to depend on the allegation of sovereignty in a State, in the strict sense of that word. Sovereignty is an indivisible inherent attribute, incapable of any derogation by law, and doubtless involving an immunity from suits or legal proceedings of any sort. But under the Constitution as originally adopted a State might be sued by a citizen of another State. *Chisholm vs. State of Georgia*, 2 Dall. 419. And the 11th article of amendment does not prohibit a suit by a foreign sovereign or State against a State of the Union, and it seems that such a suit might now be maintained. Compare memoir, etc., of B. R. Curtis, 1, 281-284. So, too, it is undoubted that a State may now be sued by another State. And if it be said that the necessary consent to be sued was involved in the act ratifying the Constitution it may be replied that without the consent of some certain State the 11th amendment may now be abrogated and the judicial power of the nation may be restored as it was in the beginning and still further extended; so that in this respect, as, indeed, in most if not all other respects, the supposed sovereign is in point of fact subject to a power superior to itself and covering and including its whole territory. It may, however, be taken as the general law of the land that suits by private persons against a State may not be maintained. Into the origin and reason of this rule it is not necessary for the present purpose to inquire. Perhaps the specific question here to be determined is whether this suit be forbidden by the law of Rhode Island, since if forbidden to the Courts of the United States only by virtue of the 11th amendment, it might be the proper course to remand it to the Supreme Court of Rhode Island rather than to make an order on this demurrer.

I do not find that the courts of this State have specially passed on this question; but I think it may be taken to be an assumption, which would underlie any decision should such be required, that such a suit as this is alleged to be cannot be maintained. And so it must be for this purpose taken to be the general law, and so of force here as elsewhere. In *Cunningham vs. Macon & B. R. Co.*, 109 U. S. 446, the Court assumed "as a point of departure unquestioned" and conceded in all the cases that "neither a State nor the United States can be sued as defendant in any court in this country without their consent except in the limited class of cases in which the State by virtue of the original jurisdiction conferred on that court by the Constitution."

This statement of principle is indeed more than sufficient to decide the case, then, before the Court, since that case also was an action in the United States Court against a State by a citizen of another State; nevertheless, I take it as sufficient statement of the general law for the purpose of this case.

I come then to the question whether the grant in the act of Congress of 1890 be a grant to the State or a grant to the Treasurer of the State or to the college through him as a mere channel of payment."

It is worth while to observe that the original grant made in the act of 1862 for the purpose of founding these colleges was a grant to the State, and the control of the fund, and probably also of the colleges established thereby, was committed to the State. This is not denied here, and while it is by no means decisive, it seems to me at least to suggest that if the supplementary funds granted in 1890 are to be otherwise administered there should appear at least an undoubted inference to that effect from the later act of Congress. The second act must doubtless be taken to have passed in view of the particular as well as the general provision of the first act.

Coming, then, to a consideration of the verbal provisions of the act of 1890, I find that it first provides "that there shall be and hereby is annually appropriated * * to be paid as hereinafter provided, to each State and Territory for the more complete endowment and maintenance of colleges for the benefit of agriculture and the mechanic arts now established, or which may hereafter be established," in accordance with the act of 1862, certain sums of money, to be applied to certain purposes; that "the annual amount to be paid" after ten years "to each State and Territory shall be \$25,000;" "that no money shall be paid out under this act to any State or Territory for the support and maintenance of a college when a distinction of race or color is made in the admission of students," and that the money appropriated shall in such case be divided according to a prescribed method.

The second section of the act is as follows:

Section 2. That the sums hereby appropriated to the States and Territories for the further endowment and support of colleges shall be annually paid on or before the 31st day of July of each year by the Secretary of the Treasury, upon the warrant of the Secretary of the Interior, out of the Treasury of the United States to the State or Territorial Treasurer, or to such officer as shall be designated by the laws of such State or Territory to receive the same, who shall, upon the order of the trustees of the college or the institution for colored students, immediately pay over said sums to the Treasurers of the respective colleges or other institutions entitled to receive the same, and such Treasurers shall be required to report to the Secretary of Agriculture and to the Secretary

of the Interior on or before the first day of September of each year a detailed statement of the amount so received and of its disbursement. The grants of money authorized by this act are made subject to the legislative assent of the several States and Territories to the purpose of said grants; provided that payments of such installments of the appropriation herein made shall become due to any State before the adjournment of the regular session of Legislature meeting next after the passage of this act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

The act then goes on to provide that "if any portion of the moneys received by the designated officer of the State or Territory for the further or more complete endowment, support and maintenance of colleges, or of institutions for colored students, as provided in this act, shall by any action or contingency be diminished or lost, or be misapplied, it shall be replaced by the State or Territory to which it belongs, and until so replaced no subsequent appropriation shall be apportioned or paid to such State or Territory. * * * And further that "the Secretary of the Interior shall ascertain and certify to the Secretary of the Treasury as to each State and Territory whether it is entitled to receive its share of the annual appropriation for colleges or of institutions for colored students under this act, and the amount which thereupon each is entitled respectively to receive;" and that "if the Secretary of the Interior shall withhold a certificate from any State or Territory of its appropriation the facts and reasons therefor shall be reported to the President, and the amount involved shall be kept separate in the Treasury until the close of the next Congress, in order that the State or Territory may, if it should so desire, appeal to Congress from the determination of the Secretary of the Interior;" and that "the Secretary of the Interior shall annually report to Congress the disbursements which have been made in all the States and Territories, and also whether the appropriation of any State or Territory has been withheld, and if so the reasons therefor."

These, I believe, are all the words in the act important to be considered, unless it be the provision that the Presidents of the colleges shall make annual report to the Secretary of Agriculture and the Secretary of the Interior as to the work, condition and progress, receipts and expenditures of the colleges.

It seems to me very plain that these words import on their face a grant to the State and by consequence a duty in the State to administer the grant for the prescribed purpose; and I am unable to see any consideration arising from the nature of the case which should modify this plain import. The provisions as to payment to the Treasurer and payment by him do not necessarily exclude the controlling action of the State.

It is convenient that a particular person be designated as the agent for receipt and disbursement; and these words make this designation without stating, its terms at least, whether he acts as agent for the State or for the Government. But the general scope of the act is clearly consonant only with a grant to the State. The money is to be paid to each State; the amount to be "paid to each State" is to be so much; no money shall be "paid to any State" in certain contingencies; the money is spoken of as "appropriated to the States," and the installments as becoming "due to any State;" that the fund, if lost, shall be replaced by "the State or Territory to which it belongs;" that the Secretary shall report "as to each State and Territory whether it is entitled to receive its share;" and that the Secretary in certain cases "shall withhold a certificate from any State or Territory of its appropriation." It is also provided that the Secretary shall report "the disbursements which have been made in all the States and Territories, and also whether the appropriation of any State or Territory has been withheld."

Those latter words do, indeed, give color to the suggestion that the reference to a grant to the States imply not a grant to the States as political bodies, but rather grants to persons or corporations within the limits of these States. But all the other phrases of the act look the other way. The act, verbally read, leaves no ground for the interpretation urged by the complainant.

But a consideration of the purpose and scope of the act seems to me still more persuasive. Under the act of 1862 the State controls at least the fund which supports the college and is liable to make good any loss or misapplication of the principal. Under the act of 1890 the State is equally liable and ought to have at least an equal control. The very questions which will arise if this bill be retained suggest that they are fit to be determined by the State only under whatever supervision that Congress may see fit to exercise. The complainant contends that the Treasurer, under the act of Congress, has the simple ministerial duty, to pay over the funds to the Treasurer of the Agricultural College. But here, it appears are two corporations each claiming to be the beneficiary. In order to determine between these conflicting claims he must decide what action is necessary to constitute a beneficiary, and also whether such action has been in favor of each of the claimants. This decision seems to me appropriate for the State by legislative act and not for an officer controlled by judicial mandate. The State is to establish the beneficiary, to control its funds, to be responsible for its misdeeds and for its errors, if any there be, as to the application of funds; and I find myself unable to resist the conclusion that unless restrained by clear words or certain implication, the State has the sole right to ascertain in the beginning and at each suc-

cessive step the identity of the corporation which it has so designated and for which it is so reponsible.

The demurrers must, therefore, be sustained.

The position taken by the Attorney General of the State and the counsel for this College, that the State could not be sued without its consent, and that the injunction restraining the General Treasurer from paying the funds received for agricultural and mechanical education under the Congressional act of August 30th, 1890, to the treasurer of this College as provided by the act of incorporation passed May 19th, 1892, was, in fact, a suit against the State, was sustained by the Court, and on June 16th the decree was entered dissolving the injunction and dismissing the bill with costs. Brown University, however, appealed from the decree to the Supreme Court of the United States, and some time is likely to elapse before a hearing can be reached. Meantime the fund received by the General Treasurer under the act of August 30th, 1890, amounts to \$88,318.42, and is not available for the support of this institution. The additional appropriation made last year, because the said fund could not be used, becomes necessary again this year, and will be necessary each year until the Morrill funds become available.

Since the opening of the last fall term a full complement of classes has been in attendance, and the coming June will witness the graduation of the first class.

The report of Dr. J. H. Washburn, President of the College, which we have the pleasure to present herewith gives somewhat in detail the additions and improvements made during the year. As far as possible the various departments have been equipped to perfect the instruction authorized by the course of study.

The report of Hon. Melville Bull, Treasurer of the Board, is appended to the report of the President of the College.

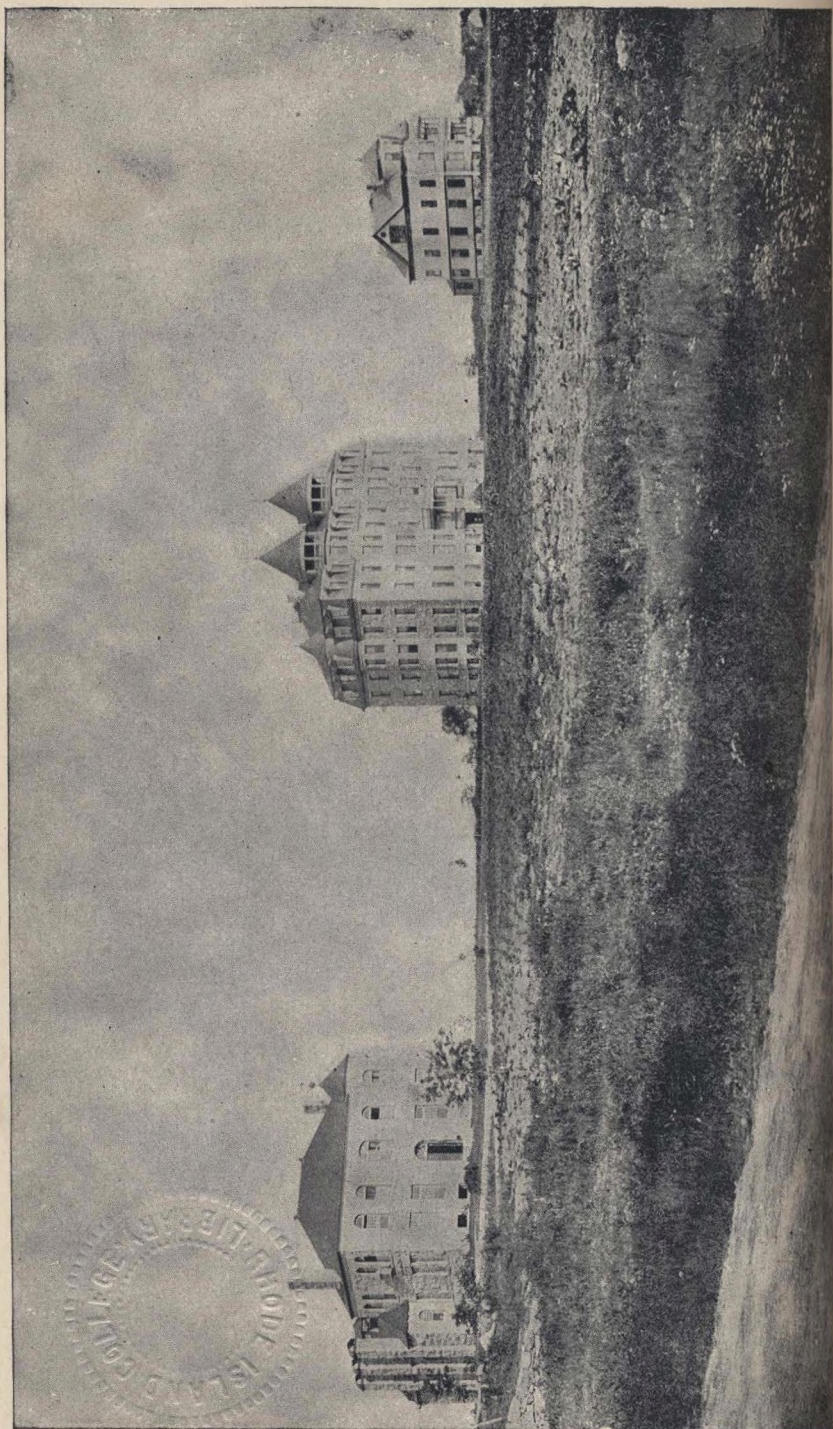
The Board of Managers have held fifteen meetings during the

year, of which seven have been held at Kingston and eight in Providence.

Respectfully submitted by the Board of Managers,

CHAS. O. FLAGG,

President.



GENERAL VIEW OF COLLEGE BUILDINGS.

REPORT OF THE PRESIDENT.

*To the Board of Managers of the Rhode Island College of
Agriculture and Mechanic Arts:*

GENTLEMEN: It gives me pleasure to submit to you the following report concerning the progress and needs of our Institution:

HISTORY OF THE INSTITUTION.

In 1863 the State of Rhode Island accepted from the United States Government the land grant scrip, which gave to each State thirty thousand acres of the public lands for each Senator and Representative in Congress. The land was to be sold by the States, or their agents, the proceeds arising from the sale invested, and the annual income derived therefrom was to be "inviolably appropriated by each State which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to Agriculture and the Mechanic Arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

On March 2d, 1887, the act known as the Hatch Act was passed, appropriating \$15,000 annually to each State, for the purpose of establishing an Agricultural Experiment Station in connection with an Agricultural College or School.*

* See Bulletin No. 1 of the Experiment Station.

From the time of the acceptance by the State of Rhode Island of the land scrip in 1863, there were many people who felt that this State did not offer to young men such advantages for instruction in agriculture and mechanic arts as others afforded, which had genuine agricultural and mechanical colleges. So great was the dissatisfaction among the citizens of Rhode Island at the absence of these educational advantages, that they were determined to have the Hatch Agricultural Experiment Station located at a *bona fide* agricultural educational institution.

The Rhode Island State Agricultural School was established according to Chapter 706 of the Public Laws, passed May 23, 1888. (See Fifth Annual Report, page 6.)

The United States Congress, on August 30, 1890, passed an act known as the new Morrill Bill. This appropriated for the further support of the agricultural and mechanical colleges a sum beginning with \$15,000, and continuing with a yearly increase of \$1,000 until the annual appropriation should reach \$25,000.

That the school already established might receive the benefit of the act of Congress, the General Assembly amended Chapter 706 of the Public Statutes, (for text see Fifth Annual Report, page 12), incorporating the Rhode Island College of Agriculture and Mechanic Arts.

Since September, 1892, the institution has been conducted on a college basis with an entirely new course of study. During the past year we have added a new class to our numbers; now we have for the first time four classes. The scholarship of the last entering class was somewhat better than that of any preceding class, due to the fact that we have required a higher percentage at the entrance examination.

The increase in our means through the additional appropriation by the last General Assembly allowed us to fulfil the requirements of the law incorporating this institution as the Rhode Island College of Agriculture and Mechanic Arts, by adding to our faculty instructors for a mechanical course. In May last Prof. Wm. E.

Drake was called from Pratt Institute, Brooklyn, where he has taught for the past eight years, to take charge of our mechanical department. He is giving instruction in mechanics, both applied and theoretical, and in physics. His work has been in every way satisfactory. His report will be submitted later.

In September last Dr. O. C. Wiggin accepted the chair of biology. We feel that his experience and knowledge will be an especial benefit to those about to step out into practical life. We are fortunate in having an able physician in the faculty in case of accident or sickness, which is so apt to visit sooner or later an institution of this kind. The department of English has a new instructor, Miss Ruth M. Williams, who is teaching the Freshman English and the bookkeeping in an acceptable manner. There has been a decided growth in the facilities for instruction in our different departments, which will be noticed more fully under the individual reports. One of the most pleasing improvements is the fitting up of an excellent studio for the art department, which is under the able management of Miss Mary P. Helme, recently teacher of art at the Friends' School, Providence.

The Reading Room Association of the students has furnished the reading room with the following periodicals: The Century, Harper's, Frank Leslie's, The Cosmopolitan, The Californian, The Review of Reviews, Popular Science Monthly, The North American Review, The Forum, The Chatauquan, The Garden, The Graphic, Harper's Weekly, New York Herald, Ladies' Home Journal, Scribner's, Puck, Providence Journal, Scientific American, California Fruit Grower, Pacific Rural Press, Power, American Machinist, Carpentry and Building, Blacksmith and Wheelwright. The Youth's Companion, Golden Rule and Illustrirte Welt are loaned by individual students for the use of the reading room, and the Breeder's Gazette, Rhode Island Pendulum, West-erly Narragansett Weekly, Evening Telegram, the Monthly Bulletins of the R. I. State Board of Health, and the Congressional Record are donated.

The library has grown. We have already an excellent selection of reference books, but are sorely in need of many more, and hope during the coming year to make further additions.

INSTRUCTION.

GENERAL AND AGRICULTURAL CHEMISTRY.

With our new course of study, instruction in chemistry begins with the Sophomores' third term. It consists of lectures and recitations three hours per week, with laboratory work one afternoon per week. The same number of lectures and recitations is continued during the first term, Junior year, and the laboratory work consists of qualitative analysis two afternoons per week. During the second term, Junior year, organic chemistry is begun, consisting of lectures three hours per week, and qualitative analysis is continued three afternoons per week. During the third term, agricultural chemistry is taught by lectures four hours per week, and qualitative analysis three afternoons per week. The instruction in agricultural chemistry consists of lectures and recitations with laboratory work upon artificial digestion, analysis of soils, fodders and fertilizers, milk, butter and cheese, tests for poisons in the stomachs of different animals, analysis of fruits for sugar, starch and albuminoids, and the study of chemical changes in soils. Instruction in inorganic chemistry comprises recitations and laboratory work upon Remsen's advanced course in inorganic chemistry. Special illustrations, however, are given in the line of agriculture, physiology and hygiene, for the purpose of making the chemistry of the farm and kitchen familiar to all. In the chemistry of the halogen compounds, especial attention is given to photographic chemistry and manipulation, which prepares the students for a special course in photography, which may be taken as an elective branch in the study of chemistry.

Text books : Remsen's Inorganic Chemistry (advanced course), Remsen's Theoretical Chemistry, Remsen's Organic Chemistry,

Orndorff's Laboratory Manual, Appleton's Qualitative and Quantitative Analysis.

The Freshman class study physical geography during the first term. They pay special attention to the scientific phases of it, to the chemistry and geology of the soils, the influence of air and water on the same; and much reading and time are expended on the flora and fauna of the different countries. Warren's Physical Geography is taken as a basis, and Dana's Coral Islands, Shaler's Aspects of the Earth, and Dana's Characteristics of Volcanoes are thoroughly studied during the term. This course seems especially valuable to introduce the student to the scientific studies which are to follow.

PRACTICAL BEE CULTURE.

The agricultural men during the first term of the senior year are required to take this branch of agricultural instruction. Others wishing to attend the class may be allowed to do so.

A knowledge of the habits of bees, how to breed and improve them, and the principles underlying their management for the production of the greatest amount of honey, is not only of value on account of the opportunities presented by the abundant honey pasturage of many sections of our country, but also in view of the important part bees play in aiding the fertilization of many crops; thus doing greater service than in furnishing honey. This interesting branch will be taught by Mr. Samuel Cushman, Apiarist of the Experiment Station.

This instruction will be thoroughly practical. The natural history, physiology, and the peculiar habits of bees will be taught, to acquaint the student with the reasons for performing the various operations, but the class-room instruction will be but an introduction to the practical work in the Experiment Station Apiary. Here students will occasionally spend a few hours during one spring and fall term; put together hives, prepare boxes for comb honey, open hives of bees, divide colonies, hive swarms, rear queen, re-queen colonies, make several colonies into one,

adjust surplus cases, gather the honey crop, clean and crate comb honey, extract and bottle liquid honey, and prepare the colonies to safely pass the winter. Only by actual work among the bees can confidence be gained and the knowledge made really available.

The Apiary of twenty colonies is fitted with the best of hives for performing all the operations in vogue among bee-keepers with the least amount of labor, and furnishes bees, combs, queen-cells, and other illustrative material for use in the class-room. The Station collection of the different hives used by the various leading honey producers is also a valuable aid in this line of work.

An examination on the fundamental principles of bee management as well as to the proper procedure in supposed cases or emergencies, will be made at the end of the course.

Practical demonstration in the Apiary is, to a certain extent, given to all visitors who are specially interested in the work, as well as advice relating to bee management.

GEOLOGY.

This will be taught for the first time by Dr. Wheeler, Chemist of the Experiment Station.

To the President:

The course in geology will embrace a study of the chief divisions employed in historical geology, or the study of rocks, the elements and minerals of which they are composed and the natural processes by which they are changed to soil.

Especial attention will be paid to the study of soil, soil analyses, and the causes of soil sterility.

Occasional excursions will be made to places of especial geological interest for the purpose of fixing more firmly the ideas obtained in the class-room and for the purpose of obtaining a practical idea of the methods employed in making geological maps and general geological observations.

Respectfully submitted,

H. J. WHEELER,

Professor of Geology.

BIOLOGY.

To the President :—

The studies pursued in this department are as follows :—

First year—Elementary Anatomy and Physiology through the winter and spring terms.

Third year—Zoölogy through the fall term.

Fourth year—Advanced Anatomy and Physiology, Comparative Anatomy, Comparative Physiology and Microscopic Anatomy through the entire year; Veterinary Science during the winter term; Constitution of the United States together with State, County and Town Government through the fall term; Political Economy and Sociology through the winter and spring terms; Physiological Psychology through the spring term.

But little use is made of text books in the class room. The small classes render demonstration, familiar lectures and class discussions practicable, and they prove more useful in imparting instruction. Students have free access to libraries pertaining to these various branches, and they are required to own and study one work on each subject at the time under consideration. Much of the instruction is topical. Special attention is given to blackboard and microscopical illustration and to physical demonstration. Experimental work has not yet been widely practicable, owing to the want of a suitable laboratory and of necessary appliances. Dissections of the various domestic animals have been made, however, as often as the material and opportunity have been offered. It is proposed to make, from time to time, such anatomical preparations as may afford experimental work to the student in comparative anatomy and such as can be preserved for future use in the class-room.

Our proximity to the sea and to fresh water lakes and rivers, together with a surrounding country of forest and field, gives us unusual facilities for gathering material for zoölogical study.

With few exceptions the students are doing honest and proficient work. The course laid out for the senior class is fully up to its capacity, but it has shown, in the main, an aptitude rather unexpected. Its special predilection for the study of civil government and political economy was hardly anticipated. No doubt the present industrial disturbances and distresses of the poor in the cities, together with the discussions in Congress of the repeal of the Sherman act and of the tariff changes, as they have come to us through the daily press, have had much to do in awakening an interest in these living topics. Seldom has there been in this country a better opportunity for observing the practical workings of our Legislative and Executive Departments than was afforded by the extraordinary proceedings in Washington last fall.

The universal lack of any knowledge of Latin and Greek on the part of our students is keenly felt in courses of study made up so largely of the natural sciences as we have here. A full and easy comprehension of the terminology of chemistry, botany, geology, zoölogy, entomology, anatomy, physiology and psychology depends on some knowledge of these neglected languages. It is most desirable that a place be accorded to these branches in our course of study, and as early in the curriculum as practicable.

Our hygienic conditions in and about the college buildings are all that can be desired. The health of the students and teachers has been uniformly good. No cases of illness have occurred on the premises during the present college year. The exercise the students get on the College Farm and in the shops of the mechanical department goes far towards supplying the need of a gymnasium. Still, much of the time during the winter a gymnasium would be of great utility to both student and teacher. For several months no out-of-door work is performed, and the students need a systematic physical training under a competent teacher.

Respectfully submitted,

OLIVER C. WIGGIN,

Professor of Biology.

BOTANY AND HORTICULTURE.

To the President :—

Since my last report important additions have been made to the facilities for laboratory instruction in botany and for field instruction in horticulture. These have been highly appreciated by both the students and the instructor.

BOTANY.

A more suitable room has been assigned for the botanical exercises and furnished with appropriate tables and cases. Twelve compound microscopes, two demonstration microscopes, one laboratory microtome, four hand microtomes, four Abbe camera lucidas, four stage micrometers, four ocular micrometers and a Leitz's micro-photographing apparatus have been imported from Germany and placed in use, and suitable reagent cases, dissecting instruments, etc., have been provided. Several valuable books of reference treating of systematic botany, botanical histology and micro-chemistry have been placed in the library and a small number of plants have been added to the College herbarium, which is yet too small.

Only slight changes of minor importance have been made in the course of

study, which was explained somewhat in detail in a previous communication. Our laboratory is equipped with well selected apparatus amounting in value to nine hundred dollars.

HORTICULTURE.

A portion of the fruit and vegetable garden previously used by the Experiment Station has been set apart, by the authority of the Board of Managers, as the College garden, and the care of it is transferred to this department. There is now growing in this garden an orchard of 295 fruit and nut trees, with the kinds as follows: 120 apple trees, 160 pear trees, 58 plum trees, 20 cherry trees, 9 peach trees, 2 apricot, 1 nectarine, 1 crimson-leaf prune, 1 *Prunus Simonii*, 1 persimmon, 1 quince, 2 soft-shelled almond, 2 hard-shelled almond, 2 Russian almond, 4 filbert, 3 English walnut, 2 pecan-nut, 3 Japanese chestnut, 1 Spanish chestnut, 1 Hathaway's chestnut and 1 black walnut. These trees are in a vigorous, growing condition and vary in height from about seven to fifteen feet. There is also in this garden a vineyard of 500 vines which produced during the past year 100 pounds of grapes. The varieties are the Worden, Concord, Moore's Early and Delaware.

There are plantations of the smaller fruits as follows:— $\frac{1}{2}$ acre of raspberries (red, yellow and black), $\frac{1}{4}$ acre of blackberries, $\frac{1}{4}$ acre of strawberries, 70 currant bushes, 20 gooseberry bushes and 25 Juneberry bushes.

The product of the garden during the season of 1893 has been $34\frac{1}{2}$ bushels of strawberries, 443 boxes of raspberries, 130 boxes of blackberries, 1000 pounds of grapes, 319 heads of lettuce, 224 bunches of radishes, 50 bunches of beets, 36 bunches of onions, 22 bunches of celery, 144 ears of sweet corn, 2 barrels of apples, $3\frac{1}{4}$ bushels of peas, 1 bushel of beans, 100 cucumbers, 10 bushels of beets, 5 bushels of turnips, 10 bushels of onions, 100 bushels of potatoes, $4\frac{1}{2}$ bushels of tomatoes, 250 cabbage plants and 100 tomato plants. This produce has mainly been used in the Boarding Department of the College, the remainder being readily sold on the grounds at fair market prices.

In the ornamental grounds about the buildings and along the avenues there have been planted during the year 228 shade trees of the following kinds:—119 Norway and sycamore maple, 40 Norway pine, 12 hemlock, 11 European larch, 5 white pine, 5 Siberian arbor-vitæ, 3 *Retinospora plumosa*, 2 dwarf pine, 1 Chilian pine, 1 apple, 1 European alder, 1 white oak, 1 tulip tree, 1 Canada red-bud, 1 pecan-nut, 1 English walnut, 1 black walnut, 1 weeping willow and 25 ornamental shrubs of various kinds. In addition to this the lawns have been kept in order under my supervision, and, in part, the walks and drives. These operations have been enumerated thus fully in order to

show the opportunities that are now offered for actual practical experience in horticulture in connection with the lecture-room exercises.

Respectfully submitted,

L. F. KINNEY,

Professor of Botany and Horticulture.

TEXT-BOOKS.

Botany—Structural Botany, Gray; Physiological Botany, Goodale; Manual of Botany, Gray; Botanist and Florist, Wood; Botany, Advanced Course, Bessey.

Horticulture—The American Fruit Culturist, Thomas, supplemented by lectures on Market Gardening, Forestry and Landscape Gardening.

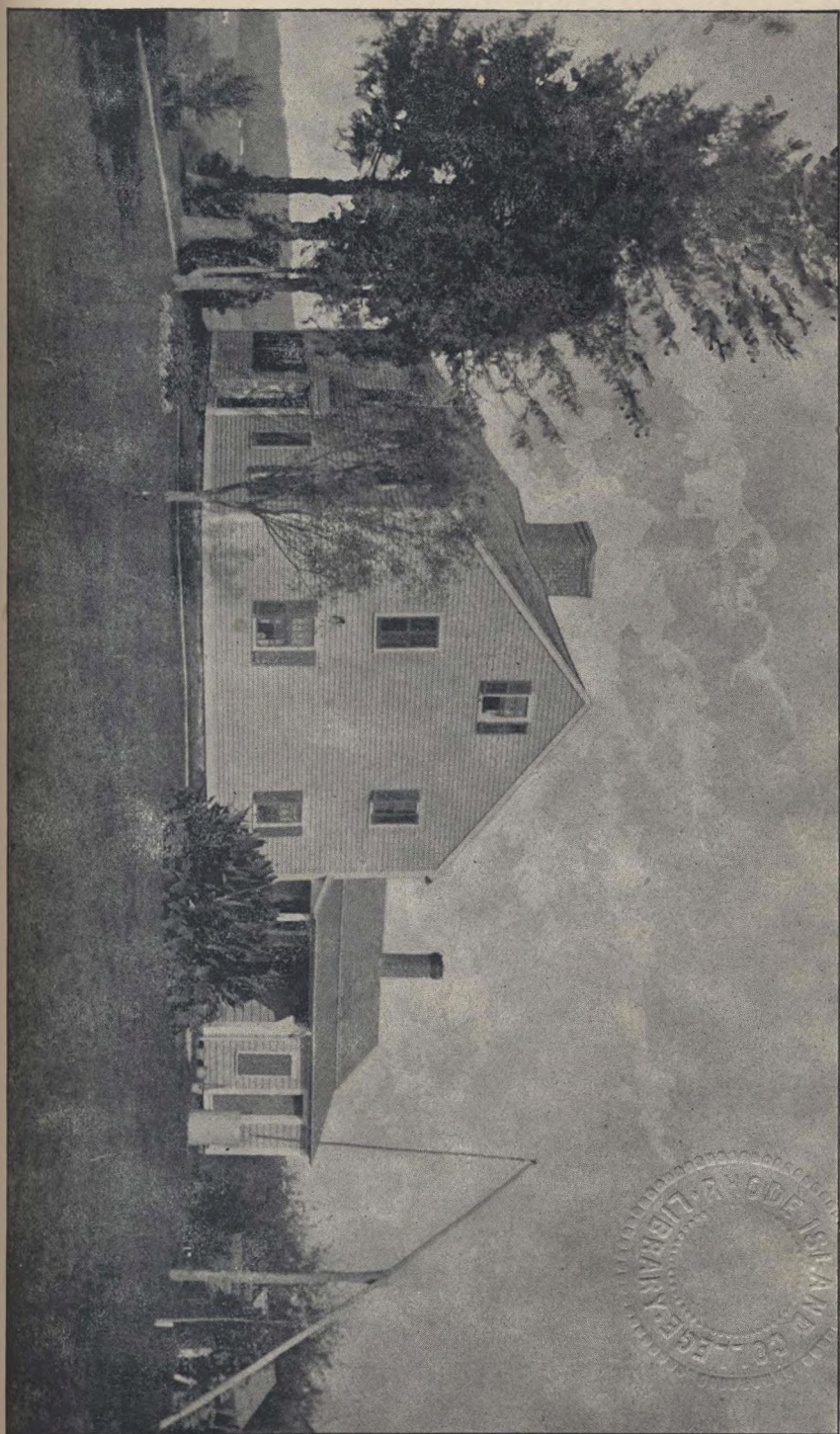
AGRICULTURE.

To the President:

The change in the course of study made necessary by the advancement from School to College organization, and the lengthening of the course one year has required some temporary changes in the agricultural instruction for the Senior and Junior classes, but the present arrangement of topics will be followed with future classes, subject always to change when an improvement can be made.

The term *Agriculture* is broad and comprehensive—including many of the sciences set apart as separate divisions in an agricultural college, and where they are to be taught “in their relation to agriculture.” The work of this division is intended to cover ground both practical and theoretical in agricultural knowledge—not included in other divisions—and to further impress upon the student the application of scientific principles to agriculture. The course for the first year is the same for both the agricultural and mechanical students and aims to begin with such subjects as may be somewhat familiar to him and about which he has some elementary knowledge. The soil might quite properly be considered the correct starting-point for an agricultural course, but to study the soil intelligently requires some knowledge of chemistry, and should properly come at such a time in the course as to follow at least elementary instruction in that branch. The same is true of the use of fertilizers and the growth of plants, except that a knowledge of botany is essential in the latter.

One afternoon in each week of the first term of the Freshman year is devoted to the study of farm buildings, their location and convenience of arrangement;



UNIVERSITY OF CALIFORNIA
LIBRARY

FARM HOUSE.

farm machinery, its use and care; a discussion of general and special farming with the arrangements of farm buildings and fields for the various kinds of farming, including the subject of fences and fencing. The third term is devoted to the study of land drainage.

The agriculture of the Sophomore year is assigned to the study of the breeds of live stock,—horses, cattle, sheep and swine,—with practice in tracing pedigrees from herd records, and the use of score cards in judging animals. This subject has been very acceptably taught by Mr. J. D. Towar, Assistant Agriculturist. Lectures on farm crops—planting, cultivation and harvesting, are also included in the second year's work. Two terms of the Junior year are given to the study of soils, manures and fertilizers. This includes the relation of water, heat, light and air to the soil as affecting plant growth and crop cultivation.

Some time is given to the careful study of the manures made upon the farm; their value and the best course to pursue in handling them to prevent loss. Chemical and artificial fertilizers as plant foods and as chemical agents in rendering inert material in the soil available to plants, receive the consideration due them. The student is taught how to learn what the soil requires and how to compound the materials to supply the elements found lacking.

Senior year agriculture is devoted to the study of the laws of breeding and stock feeding. The latter includes the compounding of feeding rations for specific purposes in the feeding of various classes of animals and practice in the selection of such waste products used for feeding as will balance the coarse fodders grown on the farm to make a cheap and complete food to produce the most satisfactory results.

The farm, fields and work of the Experiment Station are at all times available for the purpose of illustration. The students are not required to devote their time to manual labor in the common operations of the farm with which they are already familiar. Skill in manual labor is the result of practice, and once the knowledge of and the reason for any certain farm operation is acquired by the student, it is hardly wise for him to spend the time and opportunities of a college course in the acquiring of mere manual dexterity in farm operations. He can easily do that elsewhere. His time here can be used to better advantage.

For the successful management of the farm, a modern barn with root cellars and silo and facilities for the keeping of a dairy, sheep and other farm stock is absolutely necessary. Aside from its value to the farm it would be of great service in many ways to the instructor in agriculture.

Agricultural text-books suitable for class use have not yet reached the state

of perfection found in those of other lines of study, and the labor of teaching is augmented by the necessity of lectures and the more frequent use of reference books. The Experiment Station libraries are valuable for this purpose. Collections of chemicals and fertilizing materials, grains, various commercial foods and by-products are used for the purpose of illustration and instruction.

The text-books used thus far are as follows: Draining for Profit and Health, Waring; Horses, Cattle, Sheep and Swine, Curtis; Agriculture, Storer; Stock Breeding, Miles; Feeding Animals, Stewart.

Respectfully submitted,

CHAS. O. FLAGG,

Professor of Agriculture.

ENGLISH.

To the President :—

The study of English extends through the four years of the course and is progressive in its character. It comprises composition, rhetoric and literature.

In the Freshman year there is a review of elementary English. An effort is made to develop a correct literary taste in the students, by reading in class of the representative works of famous authors, usually American. The past term, this instruction has been given most satisfactorily by Miss Williams, the assistant in English.

In the Sophomore year, the study of American literature is continued, and the principles of rhetoric are taught. Written work more advanced than during the first year is also required.

General English literature is studied during the second and third terms of the Junior year. While the subject is presented as a whole, special prominence is given to certain epochs and authors; and a writer is considered not only from the standpoint of his individual genius, but as viewed in the light of his times. Much attention is paid to the careful reading of selections from eminent authors; and whenever it is possible, entire works are chosen. Exercises in composition will be a feature of this work.

In the Senior year, electives in English literature are offered, the plan being to supplement the more general courses of the Junior year by a detailed study of special authors. Essay writing and declamation are required of the whole class.

The books purchased for the library during the past year have added much to the students' interest in literature.

HISTORY.

This subject is so vast that it demands much more time than is at present allotted to it during the Freshman year. As it is now studied, a careful review of American history is followed by a survey of general history. But electives will be offered as the elasticity of the curriculum shall permit. The method is largely topical. As in the case of literature, the books added to the library during the year have greatly increased the efficiency of the department; more, however, are needed. Miss Williams at present has charge of this work.

FRENCH.

As the course is now arranged, French is studied only during the second year; but in the future, it will probably be made elective for the Juniors and Seniors. A student would thus gain a greater proficiency in the language and his acquirements prove of more practical value than is at present possible. During the past year, in addition to work in grammar and composition, short stories and poems, also a play,—“*La Poudre aux Yeux*”—has been read.

GERMAN.

German is required of all students during the Junior year. The course for beginners consists of grammar, composition, dictation, conversation and the reading of easy stories and poems. During the Senior year, German is for the most part elective; and the work offered for the winter term of 1894 will be the critical reading of Schiller's “*Wilhelm Tell*” and an outline study of German literature. This past term an advanced division has read with ease and pleasure “*Der Fluch der Schoenheit* (Riehl) and “*Die Harzreise*” (Heine). The course will vary from year to year, but will always be adapted to the needs of the classes. The aim will be to teach the student to speak and write simple German, to read the language of science, and to enjoy some of the masterpieces of German literature.

TEXT-BOOKS.

Exercises in English.....	Strang.
Lessons in English.....	Lockwood.
Composition and Rhetoric.....	Williams.
Rhetorical Analysis.....	Genung.
Practical Rhetoric.....	Genung.
American History.....	Montgomery.
General History.....	Myers.
Familiar Talks on English Literature..	Richardson.

Many texts of authors from Chaucer to Longfellow.

Complete French Course.....	Chardenal.
French Reader.....	Super.
French Grammar.....	Edgren.
La Poudre aux Yeux.....	Labiche & Martin.
Elementary German.....	Otis.
German Reader.....	Brandt.
Die Harzreise.....	Heine.
Der Fluch der Schönheit.....	Riehl.

ART DEPARTMENT.

As before mentioned, Miss Helme has conducted this department in an able manner. She has added much to the facilities for instruction, procuring a number of casts and models to be used both in modeling and drawing. The studio, a room 50 x 80 feet, is furnished with three skylights and a large glass door on the north. The room is to be fitted with cases and racks for the individual material of the pupils.

During the Fall term the Sophomores have had drawing and modeling. There has been an advanced class of Seniors working in charcoal and pastel, and a sketch class, open to any students who desired to join it, has spent an hour each week sketching from life.

DEPARTMENT OF MECHANIC ARTS.

All students of the college receive instruction in mechanical work. As may be seen from the tabulated course of study, all of the students in the Freshman class work together in the carpenter shop six hours each week throughout the entire year.

Wood-working is continued in the Sophomore year for an additional term. In the second term the students in agriculture proceed to advanced wood-work, while the students of the mechanical course take up forging. The agricultural students begin forging in the winter term of the Junior year, and devote three hours a week to it for two terms. Information as to the detailed arrangement of both courses may be obtained from the

course of study. The character of the work in the shop is carefully chosen so as to be of the greatest possible benefit to the pupil. Thus the agricultural students are given a thorough course in wood-working, which among other things includes the drawing, planning and erection of some small building.

The forging is especially valuable to the same class of students, and they are therefore practised upon such work at the anvil as is commonly found about the farm. On the other hand the mechanical students are not carried so far in wood-working, but spend more time at forging, and then go on to the working of iron with file and chisel, and in the machine shop. Pattern making, molding and casting, and machine work in iron are vitally essential to a mechanic, but they are of much less value to one who is to follow agricultural pursuits.

The course of work done in each branch of the Mechanical Department is made as practical as possible. A series of graded exercises is laid out and the student is required to complete each piece in its order before passing on to the next.

The instructor performs the simpler exercises before the assembled class, and at the same time shows the proper methods of using the various tools. The student then works out the lesson alone, receiving individual instruction if he needs it.

All work is done from working drawings and blue prints, with frequent reference to detailed sketches on the blackboard.

WOOD-WORK.

To the President:

I herewith present the following report: The carpenter shop is equipped with twenty benches and twenty sets of tools; each set consisting of three planes, one saw, one hammer, one hatchet, one try square, one bevel, one compass, one rule, one bit-stock, one brad-awl, one screw-driver, two gauges, double and single, one drawing-knife and one spoke-shave. There is also a general tool room in which are special tools. These tools are loaned to the students by means of a check system under the supervision of my assistant, Mr. Lane.

The course in the carpenter shop is a series of exercises in planing, mortising and fitting. Special attention is given to the care and sharpening of tools, which is illustrated by blue prints. The student works entirely from drawings or sketches.

In the wood-turning room we have six wood-turning lathes; six sets wood-turning tools; one jig-saw; one boring machine, one four-side planer and one iron framed splitting and cutting off saw combined.

After completing the course in the carpenter shop the student passes to the turning room, where he must first complete a set of graded exercises before he can attempt the more difficult ornamental forms. There is also a course of machine sawing on circular and scroll saws. During the time the Sophomore class are at work with the machinery the students are in turn assigned to the care and management of the shop and boiler.

The class in wood-carving, of sixteen young women, is doing good work. They have made during the year book-cases, hand mirrors, looking-glass frames, picture frames, chairs, paper knives, crickets, etc.

During the year a complete set of steam and gas pipe tools has been added to our outfit, and all repairs and new piping are now done by our students.

Besides attending to all necessary repairing this department has made stalls in the barn, one eight-panelled shed door 8 x 14 feet, whitewood microscope tables, one dining-table, three oak writing-tables, two large oak book-cases, one microscope case, whipple-trees, fifty storm windows, and dark room for Experiment Station, and piped the same for gas and water. We have also covered the windmill tower, have set up a Rider engine and connected it with the tank and well, and have rebuilt a corn crib, 12 x 14 feet.

Last summer some of our students worked at the mechanical building, lay-floors, putting in windows, piping for water, moving and resetting machinery and hanging shafting. They also fitted up an art studio and a dissecting-room.

Respectfully submitted,

T. C. RODMAN,

Instructor in Wood-Work.

FORGE WORK.

Instruction in forging was begun May 1st, 1893. A building was placed at the disposal of the department and six forges and anvils with the corresponding necessary tools were provided. As occasion requires we can increase the number of forges to about twenty, the greatest number that our present building will accommodate.

Two classes have already received instruction in the forge shop. The Senior mechanical students have been given three hours a week, and the work done has been very satisfactory. This class has finished the short time that was allotted them for forging, and the students are now working in the machine shop.

The Junior mechanical students have spent one afternoon each week in the forge shop and are now producing some creditable work.

The simple operations of drawing, bending and shaping wrought iron are mastered in a few interesting exercises. This is followed by exercises which require welding, and by others in which hardening and tempering are necessary for the completeness of the piece. Some of the articles made are as follows: staples, door hooks, hitch rings, meat hooks, log chains chain hooks, door hinges, whippetree irons, chisels and punches.

An interesting feature of the forge work is the repairing that comes in from the College and the farm.

Our students have repaired log chains and plow chains, have repointed crow bars, stone picks and drills. In fact the iron work about the various departments is kept in excellent repair.

Students have been allowed to bring in for repair jobs of their own and are given help and encouragement to put the articles in good repair again. The agricultural students have not yet been at work in the forge shop, but a special course will be laid out for them which will be still more practical, if possible, than the mechanical course.

CHIPPING AND FILING.

A short course in the working of cast and wrought iron at the bench is given to all students of the mechanical course. Small castings are rough-finished with hammer and cold chisel, and are then smoothed, trued and fitted by means of variously assorted files. This course is completed by the making of several small tools from sheet steel. Calipers, dividers and scribes are made for frequent use in the machine shop.

During the past summer a machine shop and wood-turning room was fitted up in the Mechanical Building, situated in the northeast corner of the College grounds. All the machinery was taken from the College Hall basement and moved to its new location.

The accommodations for these two lines of work are thus somewhat enlarged, and will be sufficient for the present. The machine shop is newly equipped with machinery of the latest and best designs. The list of machinery now includes a 22 x 22 in. x 5 ft. plane, one 14 in. engine lathe, three 11 in.

engine lathes, a 13 in. sensitive drill and shaper. The Seniors of the mechanical course began work in the machine shop Nov. 15, 1893. Any report of their progress for so short a time is hardly possible.

The general outline of the course now being given is as follows: Straight turning, taper turning, cutting threads, making bolts and nuts, eccentric, crank disc face plate, tool post, plum bob, arbors, and hand turning in iron. The planing consists of a series of exercises in plane surface, angular and groove or slot planing.

Advanced work of a practical nature is in projection for the near future. This will be the building of wood-turning lathes for our own shop, and the construction of an engine, dynamos and motors for the department of electricity.

Respectfully submitted,

W. E. DRAKE,

Prof. of Mechanical Engineering and Physics.

MECHANICAL DRAWING.

To the President:

I have the honor of submitting the report of the work done in the department of Mechanical Drawing during the past year. The mechanical and agricultural men composing the Sophomore class began mechanical drawing at the commencement of the winter term. The following subjects were studied: Exercise for drawing pen; exercise for compasses, study of bolts, nuts and screw threads; lettering, plans, elevations and details of a barn. The spring term, instruction in drawing was given only to the Sophomore and Junior mechanical students.

The Juniors solved practical problems in descriptive drawing the first half of the term and finished the course with perspective work.

The Sophomores constructed the intersections and developments of solids, made tracings and blue prints, and put the remainder of the time on machine sketching and drawing. The models used were an iron vice, anvil, mitre-box, door-hanger, monkey wrench and saw clamp. The architectural class made the drawings of the elevations, plans and details of several buildings. The Junior mechanical men had descriptive geometry during the fall term. The problems were drawn and solved with instruments on paper.

I have also had charge of the work in surveying. The spring term the class worked six hours in the field and one in the class-room each week. Several fields were surveyed, plotted, and the areas computed.

The road construction class levelled and established the grades for two

roads, laid out curves and estimated areas. Considerable outside reading was done on different methods of road construction, strength of materials and bridges.*

The department has an equipment valued at \$800.

Respectfully submitted,

FREDERICK A. LANE,

Instructor in Surveying and Mechanical Drawing.

MATHEMATICS.

To the President:

Work has been carried on in the Mathematical Department according to the lines laid down a year ago, but each succeeding year emphasizes more strongly than before the fact that the ground which must be gone over by students wishing to take a degree cannot be covered with perfect satisfaction until it becomes possible for us to require for entrance, elementary algebra, at least to quadratics. This would free the last two terms of the freshman year for more advanced work, and would greatly relieve the pressure throughout the entire course.

No radical changes in courses or text books have been made since the last report.

In September of the present year Professor Drake took charge of the entire work in Physics, a change which was necessitated by the greatly increased requirements made upon the department at the time of our incorporation as a college. At the same time Mr. Lane took in addition to the surveying and descriptive geometry, the work in freshman algebra, and has carried it on with entire satisfaction to all concerned.

In the winter term of the present year a short course in general astronomy will be offered to members of the Senior class, in which it is the intention to emphasize the fundamental laws which govern the universe, and to make the class familiar with the general characteristics of the various members of our own solar system by the aid of copious stereoscopic views.

The work done by the students during the year just past has been, as a whole, very satisfactory, its quality having shown a distinct improvement over that of the previous year.

Respectfully submitted,

A. BOSWORTH,

Professor of Mathematics.

* The Mechanical Department acknowledges the receipt of a hand iron drill, donated by C. H. Armstrong & Son, of Wakefield.

TEXT-BOOKS.

Academic Algebra.....	Wells.
Plane Geometry.....	Wells.
Solid Geometry.....	Wells.
Trigonometry.....	Wentworth.
Analytic Geometry ..	Hardy.
Elements of Calculus.....	Taylor.
General Astronomy.....	Young.

PHYSICS.

To the President:

The department of Physics is now located in the basement of College Hall. The wood-turning room made vacant in the summer has been provided with benches and tables suitable for work in physics. The room is also furnished with a solar lantern which may be used for experiments in light or as a magic lantern for illustrated lectures.

The instruction is given as set forth in the course of study. The Sophomore class during the term just completed has nearly finished the subjects of elementary mechanics and sound. Electricity will be thoroughly studied in the winter term and the third term will be devoted to heat and light. The Juniors have been given a special or advanced course in electricity. The general plan of this course is to make a comprehensive study of electricity in its modern practical applications.

Thompson's Electricity and Magnetism was used as a text-book, and this was followed by a series of lectures given by the instructor.

Some of the subjects treated are: Types of dynamo machines, armatures, winding and field magnets, arc lighting, incandescent lighting, engines for electrical machinery, electric lamps, electric motors, electric railways, plating, electric furnaces, storage batteries, telegraph, telephone, electricity as applied to domestic uses. All students spend hours each week in the laboratory investigating for themselves the principles taught in the class-room.

STRENGTH OF MATERIALS AND MECHANISM.

Strength of Materials and Mechanism are taken up by the Juniors in the spring term. Anderson's "Strength of Materials" was the text-book used for the study.

As no satisfactory text-book on Mechanism could be found the instructor was forced to give the matter in the form of notes. The notes were duplicated by means of the hektograph and each pupil received a copy.

- APPLIED MECHANICS.

In the Senior year the students of the mechanical course take up the study of applied mechanics. As the present class did not have a sufficient knowledge of integral calculus, Rankin's "Mechanics" was exchanged, for the time, for Merriman's "Mechanics of Materials." The subject matter studied includes the investigation of the strength of simple and continuous beams and girders, strength of rods, pipes, cylinders, shafting, riveted joints and columns. In the third term the Seniors will make a study of the principles of steam and the steam engine.

Respectfully submitted,

WILLIAM E. DRAKE,

Professor of Mechanical Engineering and Physics.

THE COURSES OF STUDY.

The object of our courses of study is the fitting of men for agricultural and mechanical pursuits in life, whether they be wholly practical, theoretical, or the happy combination of practice and theory.

The regular course is intended to accommodate students who pass our entrance examination with a high standing, who have had two or more years of high school work, and who are able to take the whole course in agriculture or mechanics, or studies and training in both courses, and who after four years of high standing are to become applicants for the degree of bachelor of science. There is another class of earnest students who have not had sufficient preparation to take the full course in four years, and who may be able to take the degree with five years work. We have young women applicants for the degree who wish to substitute for the practical and theoretical work in agriculture and mechanics an equivalent amount of study and training in art, science, English, French, German, Latin, or history and political economy. We have also a large number of earnest students for special work in agriculture or mechanics. They are often poorly prepared, and take much more practical work than those studying for a degree. No student is allowed to take shop work alone. He must choose one or two of the branches taught and maintain

a fair standing in them. By our system of electives these students may take advanced courses in those studies for which they seem especially fitted and which are calculated to be of especial value in the vocation they have chosen.

One thing is sadly needed in our course of instruction for a considerable number of our above-mentioned pupils, namely, a course in elective Latin, extending through the first three years. I strongly urge the adoption of this course, beginning with September of the present year. There are many well-trained pupils who desire to take advantage of our excellent shops, and horticultural and agricultural instruction, but whose parents do not wish them to drop their Latin; it being believed by many that one or two years of Latin helps more towards acquiring a proper knowledge and understanding of our own language than the same study could possibly do applied directly to English. And the invaluable aid towards understanding the scientific terms used in every branch of science taught during each term could not be estimated. It would do away with the hard work necessary to acquire the terminology of every new science.

WINTER COURSE IN AGRICULTURE AND MECHANICS.

That the college may become as useful as possible to those in the State who desire to receive instruction in all, or in a portion of the subjects taught, the Board of Managers have considered it wise to open a short course in Agriculture and Mechanics. Persons taking this course may have special instruction in veterinary science, agriculture, the chemistry of fertilizers, dairying (including milk, butter and cheese analysis), carpentering, wood carving, iron work, and be permitted to take any recitation or lecture given to the regular classes, and as may seem best adapted to time and need of the individual. The course of study for such as take this special course will be decided during the first week of the term, and no change in this course will be allowed during the term unless by consent of the faculty.

*For short
course*

Applicants must be at least sixteen years old, must present a certificate of good moral character from their teacher or pastor, and show that they have had sufficient schooling to profit by the course laid out by the faculty.

This short course will continue during the winter term, from January 4 to March 29.

COURSE OF STUDY

OF THE

Rhode Island College of Agriculture and Mechanic Arts.

Freshman Year.

FIRST TERM.

Algebra.....	5 hours.
English.....	5 “
Physical Geography.....	3 “
History	2 “
Latin (elective).....	3 “

Afternoon.

¹ Agriculture	2 hours.
² Military Drill.	1 “
Bench Work in Wood.....	6 “

Saturday.

Military Tactics	1 hour.
Inspection	1 “
² Military Drill... ..	1 “

SECOND TERM.

Algebra.....	5 hours.
English.....	5 “
Physiology.. ..	3 “
Latin (elective)... ..	3 “
History.. ..	2 “

Freshman Year.

Afternoon.

Bookkeeping and Business	
Law.....	5 hours.
Wood Work.....	6 “

Saturday, same as First Term.

THIRD TERM.

Algebra and Logarithms.. ..	3 hours.
English.....	4 “
Geometry.....	4 “
Physiology.. ..	2 “
History.....	2 “
Latin (elective).	3 “

Afternoon.

Free-Hand Drawing.....	4 hours.
³ Agriculture.	4 “

*Saturday, same as First Term.*¹ Farm Management, Buildings, Fences, and Tools.² Military instruction will be given on the appointment of an officer by the War Department to our college.³ Drainage.

Agricultural Course. Sophomore Year.

FIRST TERM.

Geometry	5	hours.
¹ Agriculture.....	3	"
Physics	3	"
English	2	"
² Modern Language	3	"
Latin (elective).....	3	"

Afternoon.

Modeling.	2½	hours.
Free-Hand Drawing.....	2	"
³ Practical Agriculture.....	2	"
Physical Laboratory.....	2	"
Wood Turning.....	3	"

Saturday, same as Freshman Year.

SECOND TERM.

Trigonometry.....	3	hours.
Botany	4	"
English.....	2	"
Physics.....	3	"
Modern Language.....	3	"
Latin (elective).....	3	"

Afternoon.

Mechanical Drawing.....	2	hours.
Constructions.....	2½	"
Wood Turning	3	"
Physical Laboratory.....	2	"

Saturday, same as First Term.

THIRD TERM.

Surveying... ..	1	hour.
Physics	3	hours.
Botany.	5	"
Modern Language	3	"
Chemistry (Inorganic).....	3	"
Latin (elective)	3	"

Afternoon.

Physical Laboratory.....	2	hours.
Practical Surveying.....	6	"
Experimental Chemistry.....	2	"

Saturday, same as First Term.

Mechanical Course. Sophomore Year.

FIRST TERM.

Plane Geometry.....	5	hours.
Solid Geometry.....	3	"
Physics.....	3	"
English	2	"
² Modern Language.....	3	"
Latin (elective).....	3	"

Afternoon.

Free-Hand Drawing.	2	hours.
Wood Turning.....	6	"
Physical Laboratory.. ..	2	"

Saturday, same as Freshman Year.

SECOND TERM.

Trigonometry.. ..	3	hours.
Botany	4	"
English.....	2	"
Physics.	3	"
Modern Language.....	3	"
Latin (elective).....	3	"

Afternoon.

Mechanical Drawing.	2	hours.
Forging.....	6	"
Physical Laboratory.. ..	2	"

Saturday, same as First Term.

THIRD TERM.

Surveying.....	1	hour.
Physics.....	3	hours.
Botany.....	5	"
Modern Language.	3	"
Chemistry.. ..	3	"
Latin (elective). ..	3	"

Afternoon.

Experimental Chemistry	2	hours.
Physical Laboratory.. ..	2	"
Mechanical Drawing.	3	"
Forging.....	3	"

*Saturday, same as First Term.*¹ Breeds of Live Stock.² Modern Language will be French or German; a course in conversation, composition, and scientific French and German is given.³ Farm crops and their cultivation.

Agricultural Course. Junior Year.

FIRST TERM.¹

Road Construction and Leveling.....	3 hours.
Zoölogy and Entomology.	4 “
Inorganic Chemistry.....	3 “
Modern Language.....	3 “
Horticulture.....	2 “
Latin (elective).....	“

Afternoon.

Qualitative Analysis.....	4 hours.
Practical Horticulture.....	2 “
Leveling and Road Surveying	3 “
French (elective).....	3 “

SECOND TERM.¹

English.....	4 hours.
² Agriculture.....	3 “
Organic Chemistry.....	3 “
Modern Language	3 “
Physiological Botany	2 “
French (elective).....	3 “
Latin “	3 “

Afternoon.

Microscopy.....	2 hours.
Forging.....	3 “
Qualitative Analysis.....	6 “

THIRD TERM.¹

English.	4 hours.
² Agriculture.....	4 “
Agricultural Chemistry	4 “
Modern Language.....	3 “
French (elective).....	3 “
Latin “	3 “

Afternoon.

Chemical Laboratory.....	6 hours.
<i>Elect 1:</i> { Free-Hand Drawing.....	6 “
{ ³ Agricultural Mechanics. .	6 “
{ Botanical Laboratory work	6 “

Mechanical Course. Junior Year.

FIRST TERM.¹

Inorganic Chemistry.	3 hours.
Analytical Geometry.....	4 “
Modern Language.	3 “
Electricity and Magnetism . . .	3 “
Descriptive Geometry	2 “
Latin (elective).....	3 “

Afternoon.

Qualitative Analysis.....	4 hours.
Physical Laboratory	2 “
Lathe Work.	3 “

SECOND TERM.¹

English.....	4 hours.
Analytical Geometry.....	4 “
Modern Language.....	3 “
Calculus	3 “
Latin (elective)	“

Afternoon.

Qualitative Analysis.....	6 hours.
Lathe Work	3 “
Mechanical Drawing.....	3 “

THIRD TERM.¹

English.	4 hours.
Calculus.	3 “
Strength of Materials.	2 “
Modern Language	3 “
Principles of Mechanism.	3 “
Latin (elective)	“

Afternoon.

Mechanical Laboratory.	2 hours.
Architectural Drawing.	2 “
<i>Elect.</i> { Chemical Labratory	6 “
{ Mechanical Drawing	3 “

¹ Saturdays, same as in Freshman year.² Soils, Manures, and Fertilizers.³ Wood or Iron Work.

Agricultural Course. Senior Year.

FIRST TERM.

Anatomy and Physiology of Domestic Animals, and Veterinary Science	5 hours.
Political Economy and Science of Government.....	4 “
Modern Language (elective)...	3 “
¹ Agriculture.....	3 “

Afternoon.

Apiary Work.....	2 hours.
Orations	1 “
Art Work (elective).....	3 “

SECOND TERM.

Veterinary Science.....	4 hours.
Political Economy and Science of Government.	4 “
Astronomy	4 “
Market Gardening.....	3 “
Modern Language (elective)...	3 “

Afternoon.

Geology.....	2 hours.
Orations	2 “

THIRD TERM.

Forestry and Landscape Gardening.....	2 hours.
Geology.....	2 “
Mental Science.....	4 “
Veterinary Science.....	4 “
Thesis Work.....	3 “
Modern Language (elective)...	3 “

Afternoon.

Geology Excursions.....	2 hours.
Art Work (elective).....	3 “

Mechanical Course. Senior Year.

FIRST TERM.

Calculus.....	3	hours.
Political Economy and Science of Government	4	“
Theoretical and Applied Me- chanics.....	5	“
<i>Elect 1.</i> {	English Literature.....	3 “
	Engineering.	3 “
	Modern Language	3 “
	Chemistry.....	3 “

Afternoon.

Orations.....	2 hours.
Practice, Mechanical.. ..	6 “
Art Work (elective)	3 “

SECOND TERM.

Astronomy	4	hours.
Political Economy.....	4	“
Theoretical and Applied Me-		
chanics.....	4	“
<i>Elect 1.</i> {	English Literature.	3 “
	Modern Language.....	3 “
	Engineering.....	3 “
	Chemistry....	3 “

Afternoon.

Orations.....	2 hours.
Practice, Mechanical.....	6 “

THIRD TERM.

Thesis*Work	3	hours.
Mental Science.....	4	“
Theoretical and Applied Me- chanics.....	5	“
<i>Elect 1.</i> {	English Literature.....	3 “
	Modern Language	3 “
	Chemistry.....	3 “
	Engineering.....	3 “

Afternoon.

Practice, Mechanical.....	6 hours.
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¹ Stock Breeding and Feeding.

REQUIREMENTS FOR ADMISSION.

The requirements for admission to the college embrace both an oral and written examination in arithmetic, geography, English grammar and United States history. Applicants for the regular course will find some knowledge of algebra of great assistance.

We have no facilities for the boarding of young women at the college, the demand for industrial education for young women not having been sufficient to warrant the furnishing of special dormitory accommodations. However, if the young women can find accommodations elsewhere, they may receive a part or the whole of the instruction given, substituting for agriculture, horticulture and mechanics, English, Latin, German, French, art and mathematics.

ENTRANCE EXAMINATION PAPERS USED IN 1893.

Entrance Examination in Arithmetic, September 13, 1893.

1. Find the L. C. M and G. C. D of 724 and 896.
2. Find the cost of 8,462 lbs. of hay, at \$9.50 a ton.
3. A field containing 18 acres is 80 rods long. Find the cost of fencing it at \$1.25 a rod.
4. A merchant sells a wagon for \$161, and gains 15 per cent. How much does he gain?
5. Find the value of

$$\frac{7\frac{4}{11} - 5\frac{1}{10}}{4\frac{1}{8} \text{ of } 2\frac{1}{5}}$$

6. If copper is mixed with 20 per cent. of its weight of nickel, what per cent. of the mixture is nickel?
7. Find the interest on \$960 from March 5, 1882, to Sept. 25, 1888, at 7 per cent.
8. Which is the better to buy flour at \$8 per barrel on 6 months' credit, or at \$7.50 cash, money being worth 6 per cent?
9. What will be the cost of plastering the walls and ceiling of a room 27 feet 4 inches long, 20 feet wide, and 12 feet 6 inches high, at 27 cents per square yard, if 20 square yards be deducted for doors, windows and base-board?
10. A farmer sowed 5 bushels, one peck, 1 quart of seed, and harvested

from it 103 bushels, 3 pecks, 5 quarts. How much did he raise from a bushel of seed?

Entrance Examination in History, September 13, 1893.

1. When, where and by whom was America discovered?
2. Name four prominent statesmen before the Revolution, and tell all you can about them.
3. Give the causes of the Revolutionary War.
4. In what other wars did the United States engage before 1860, and for what reasons?
5. What is meant by the Missouri Compromise and the Monroe Doctrine?
6. Name the causes of the late Rebellion.
7. Name three important battles of the Rebellion.
8. Who were the leading generals—Union and Confederate—in the late war?
9. Who was the Union, and who the Confederate President during the Rebellion?
10. Name the Presidents elected since the late war. State whether they have been Democrats or Republicans, and how many terms they have served.

Entrance Examination in Geography, September 13, 1893.

1. What are the circles of the earth?
2. What are the meridians?
3. Define latitude and longitude.
4. What two meridians bound the hemispheres?
5. Define the two principal forms of government.
6. Bound North America and describe its political divisions.
7. Why is the climate of Western Europe different from that of America in similar latitudes?
8. Describe the mountains, principal rivers and lakes of North America.
9. Describe the natural routes of commerce.

Entrance Examination in English, September 13, 1893.

1. Name the parts of speech and give an example of each.
2. Compare the adjectives good, bad, pleasant, awkward and beautiful.
3. Illustrate the difference between transitive and intransitive, regular and irregular verbs.
4. Give the principal parts of lie, lay, sit and set. Write four sentences containing forms of the above verbs correctly used.

5. Re-write the following selection, using capitals and marks of punctuation as they may be needed:—

as i lie here wrote helen jackson while waiting for death nothing looks to me of any value except the words i have spoken for the indian. i did not write ramona said the great heart it wrote itself the heart had been consecrated and the work followed let this ramona school in this time honored city be consecrated with the wealth of full hearts and hands and the good result must follow.

6. Write a short composition on either of these two subjects:

a—A Day's Fishing.

b—What I know about cooking.

EXPENSES.

Expenses at the college will be as follows: Tuition free to Rhode Island pupils; table board at \$3.00 per week; necessary text books, fuel and lights at cost; physical laboratory expense for breakage, if the student is ordinarily careful, \$1.00 per term; chemical laboratory charges, \$3.00 for chemicals during each term of qualitative analysis; in the shops, \$1.00 per term for the use of tools; room rent, \$5.00 per annum, or \$2.00 per term; gas, an average of \$1.15 per term. Students are required to furnish their own furniture and bedding. The only other expense will be for heavy laundry work, 50 cents a dozen, two cents each for collars and cuffs. All clothing should be distinctly marked. Packages sent the students by express or freight in care of the college, may be taken from the station to the college free of charge. Once at the beginning and end of each term a team will go to the station to take or bring trunks and other baggage. If the student desires aid in procuring his furniture, such aid will be given by the President, for whom special rates are made by the dealers. Graduates will pay the cost of diplomas, \$5.00. No diplomas will be issued till the candidate has paid all term bills. Day students are required to deposit \$10 per term in advance, and boarding students must either pay term bills in advance, deposit \$50 or give bond for \$100, to insure the payment of all bills. No bond will be accepted from any member of the faculty.

LABOR.

All class work exercises will be made educative, and treated the same as laboratory work in any other branch of instruction. If a young man comes here proficient in the practical agriculture as taught at our class work, the professor of agriculture may excuse him from that work, being convinced after examination of the student that he is proficient. Agriculture, both practical and theoretical, has the same dignity in our course that chemistry or any other study has; a student will be excused from laboratory work or theoretical work of any branch in which he can pass a satisfactory examination, and the extra time allowed him for some other line of study. The labor of the students in the carpenter shop and at iron work is a part of their instruction, and is not paid for unless special arrangements be made with the professor in charge. Class work on the farm may be paid for at the price set by the professor of agriculture. All extra work outside of the required hours of labor is paid for when the student is employed by the superintendent in charge.

SELF SUPPORT.

Labor may be furnished to those students who are desirous of assisting themselves. There will be work about the buildings, on the farm, at the Experiment Station, and in the laboratories; much of this can be performed by the students.

PUBLIC WORSHIP.

The students are expected to be present at chapel exercises every morning, and on Sundays to attend service in some church at least once a day, unless otherwise excused by the excusing officer.

DEPORTMENT.

Our rule for the guidance of the conduct of the young men is to be gentlemen. Students who do not understand the elements

of gentlemanly conduct will not continue to be members of our institution. Negligence or absence from class duties of any kind will be vigorously opposed. All pupils wishing to be absent should obtain an excuse from the excusing officer beforehand. Excuses to go home during term time must be requested in advance in writing by the parents or guardians. Excuses from college exercises will not be granted when the pupils desire to go home merely for pleasure. Three unexcused absences occurring on three different days during one term, dismiss the pupil from the institution.

LOCATION.

We have an excellent location on the hillside, which furnishes us with rapid drainage and a delightful view. We are less than two miles from the railroad station. A macadamized road leads from our grounds to the station, insuring us at all times a good walk and drive. The railroad station is situated on the New York, New Haven & Hartford R. R., with eighteen trains daily, in the winter, stopping at Kingston, and more in the summer. The town is a very healthful place, five or six miles from the ocean.

STUDENTS.

SENIORS.

NAME.	RESIDENCE.	
Adams, Geo. E	Rocky Brook,	R. I.
Ammonds, Geo. C.	Kingston,	"
Burlingame, Geo. W.	Glocester,	"
Clark, Helen M.	Kingston,	"
Madison, Warren B.	East Greenwich,	"
Mathewson, Ernest H.	Providence,	"
Peckham, Reuben W.	Middletown,	"
Rodman, Geo. A.	Moorefield,	"
Sargent, Chas. L.	Peace Dale,	"
Slocum, Samuel W.	Peace Dale,	"
Spears, John B.	Foster Centre,	"
Sweet, Stephen A.	Slocumville,	"
Tucker, Geo. M.	Prudence Island,	"
Wilbur, Robert A.	West Kingston,	"

JUNIORS.

Albro, Lester F.	Middletown,	R. I.
Browning, Elisha H.	Narragansett Pier,	"
Burdick, Howland	Newport,	"
Clarke, Chas. S.	Jamestown,	"
Hammond, John E.	Jamestown,	"
Kenyon, Elisha R.	Green Hill,	"
Oatley, Lincoln N.	Peace Dale,	"
Rathbun, Nathan C.	La Fayette,	"
Scott, Arthur C.	Summit,	"

Sharpe, Russell V.....	East Greenwich,	R. I.
Spink, Bessie E.....	Wickford,	"
Tefft, Jesse C.....	Jamestown,	"
Winsor, B. E.....	Summit,	"

SOPHOMORES.

Barton, Benjamin ..	East Greenwich,	R. I.
Brayton, Chas. A.....	Fiskeville,	"
Clarke, Matthew W.....	Kingston,	"
Greenman, Adelaide M.....	Narragansett Pier,	"
Kenyon, Albert L.....	Point Judith,	"
Moore, Nathan L. C.....	Shannock,	"
Tabor, Edgar F.....	Slatersville,	"
WILLIAMS, JAMES E.....	Summit, R. I.	

FRESHMEN.

Capwell, Chas. W.....	South Scituate,	R. I.
Grinnell, Archie F.....	Middletown,	"
Hoxsie, Bessie B.....	Quonochontaug,	"
Kenyon, Chas. F.....	Shannock,	"
Marsland, Louis H.....	Susquehanna,	Pa.
Nelson, George.....	Peace Dale,	R. I.
Newton, Willis B.....	Washington,	"
Oatley, Geo. N.....	Peace Dale,	"
Tefft, E. Alice.....	Allenton,	"
Thomas, Irving.....	La Fayette,	"
Tucker, Lucy C.....	Prudence Island,	"

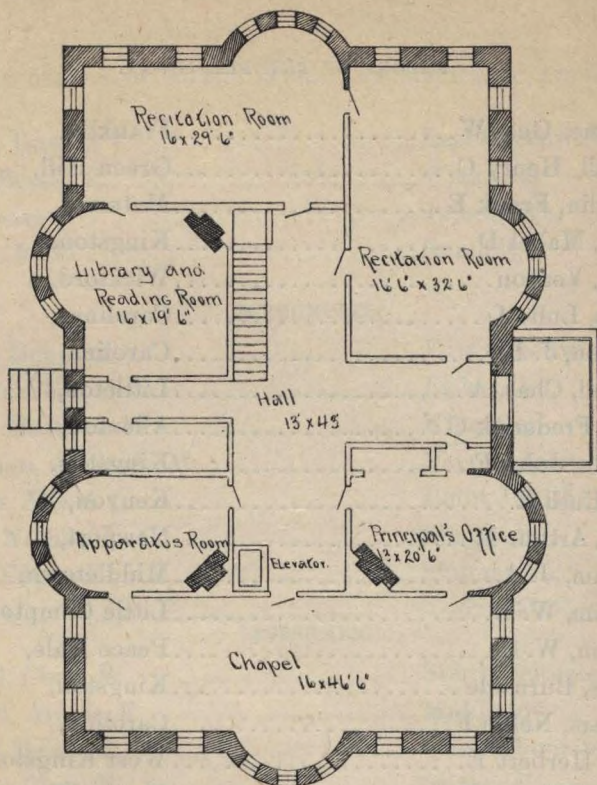
SPECIALS.

Arnold, C. T.....	Lonsdale,	R. I.
Barber, Annie E.....	Kingston,	"
Braman, B. E.....	West Kingston,	"
Brown, May.....	Narragansett Pier,	"
Burgess, Geo. F.....	Rockland,	"
Caswell, Howard M.....	Narragansett Pier,	"
Clarke, John G.....	West Kingston,	"

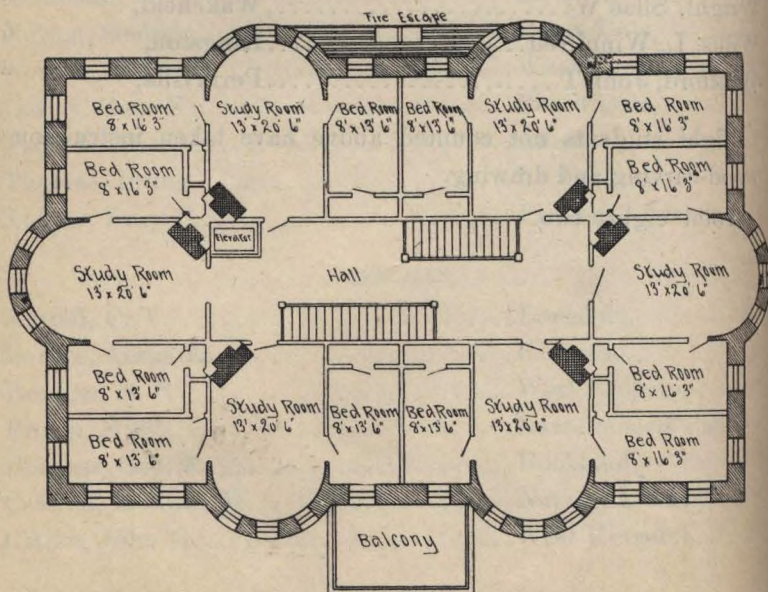
Cochrane, Geo. W.....	Franklin,	Mass.
Crandall, Henry C.....	Green Hill,	R. I.
Champlin, Frank E.....	Matunuc,	"
Eldred, Mabel D.....	Kingston,	"
Eldred, Vernon.....	Wickford,	"
Greene, Lulie L.....	Carolina,	"
Hamblen, J. F.....	Carolina,	"
Hartwell, Chas. A.....	Littleton,	Mass.
Healy, Frederick C.....	Allenton,	R. I.
Knowles, John F.....	Kingston,	"
King, Ruth E.....	Kenyon,	"
Magill, Arthur R.....	Newport,	"
Peckham, J. A.....	Middletown,	"
Peckham, W. E.....	Little Compton,	"
Rathbun, W. S.....	Peace Dale,	"
Rhodes, Burnside.....	Kingston,	"
Saunders, Nellie F.....	Carolina,	"
Taber, Herbert E.....	West Kingston,	"
Tabor, William H.....	Slatersville,	"
Wright, Silas W.....	Wakefield,	"
Willis, L. Winnifred.....	Kingston,	"
Whitford, John T.....	Perryville,	"

Eight students not counted above have taken instruction in wood-carving and drawing.

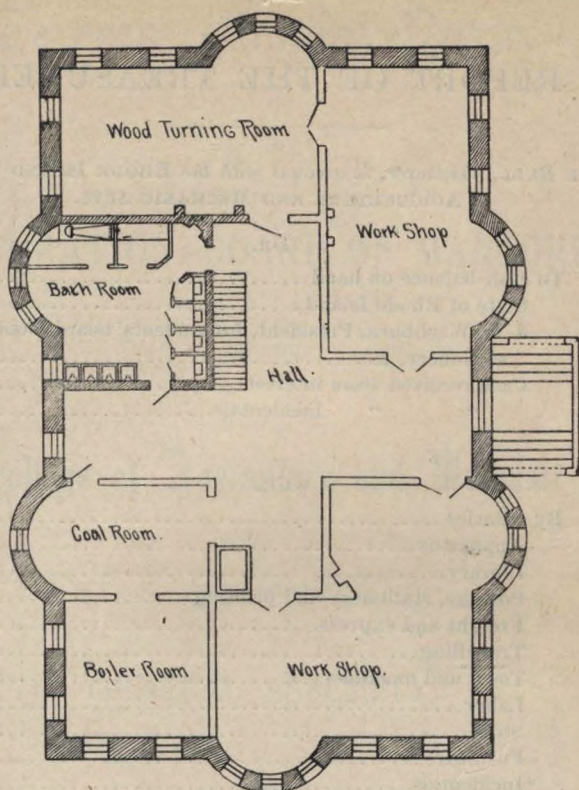
Total eighty-two.



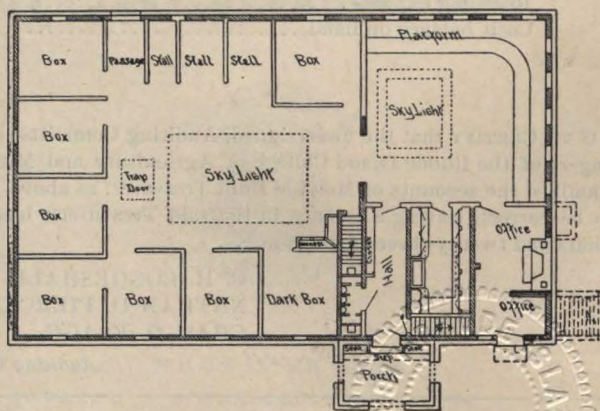
FIRST FLOOR PLAN OF COLLEGE HALL.



SECOND, THIRD AND FOURTH FLOOR PLAN OF COLLEGE HALL.
Showing size and arrangement of Students' Rooms.



BASEMENT PLAN OF COLLEGE HALL.



FLOOR PLAN OF VETERINARY HOSPITAL.



REPORT OF THE TREASURER.

MELVILLE BULL, *Treasurer, in account with the RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.*

1893.	DR.	
Jan. 1.	To cash balance on hand.....	98
Dec. 31.	State of Rhode Island	\$20,000 00
	J. H. Washburn, President, for students' board, books, stationery, &c.....	4,275 65
	Cash received from interest.....	56 85
	“ “ incidentals.....	1 50
		<hr/>
		\$24,334 98

1893.	CR.	
Dec. 31.	By Salaries	\$10,145 19
	Apparatus.....	436 73
	Library.....	369 38
	Postage, stationery and printing.....	580 16
	Freight and express.	302 57
	Travelling... ..	87 97
	Tools and machinery.....	593 16
	Labor.....	1,988 75
	Store.....	333 61
	Furniture	745 11
	*Incidentals	2,473 77
	Laboratory supplies.....	1,833 06
	Construction and repairs.....	1,807 90
	Provisions.....	1,845 13
	Boarding expense.....	743 26
	Cash balance on hand.....	49 23
		<hr/>
		\$24,334 98

THIS IS TO CERTIFY that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, as above, and find the same to be correct, leaving a balance in the said Treasurer's hands of forty-nine dollars and twenty-three cents, (\$49 $\frac{23}{100}$).

C. H. COGGESHALL,
NATHAN D. PIERCE, JR.,
CHAS. O. FLAGG,

Auditing Committee.

* Includes cost of fuel and gasoline.